

## WHAT IS CLAIMED IS:

1. A liquid crystal device having a plurality of scan signal lines and a plurality of image signal lines provided orthogonally on a substrate and having thin-film transistors provided in sections enclosed by the scan signal lines and the image signal lines, each of the thin-film transistors serving as a switching element corresponding to one of the sections and controlling transmission of light by a semiconductor layer, the liquid crystal device using patterning to form the signal lines and the thin-film transistors, wherein:

two of the thin-film transistors located between an adjacent two of the image signal lines having respective source electrodes are connected to different image signal lines; and

the respective gate, source, and drain electrodes of the two thin-film transistors are alignment-shift-compensated electrodes having configurations and structures such that, even if an alignment shift occurs during the formation of the gate, source, and drain electrodes through the patterning, at least one of a capacitance between the gate and drain electrodes and a capacitance between the gate and source electrodes is constant or varies equally in each of the two transistors.

2. A liquid crystal device having a plurality of scan signal lines and a plurality of image signal lines provided orthogonally on a substrate and having thin-film transistors each provided in sections enclosed by the scan signal lines and the image signal lines, each of the thin-film transistors serving as a switching element corresponding to one of the sections and controlling transmission of light by a semiconductor layer, the liquid crystal device using patterning to form the signal lines and the thin-film transistors, wherein:

two of the thin-film transistors located between an adjacent two of the scan signal lines having respective gate electrodes are connected to different scan signal lines; and

the respective gate, source, and drain electrodes of the two thin-film transistors are alignment-shift-compensated electrodes having configurations and structures such that, even if an alignment shift occurs during the formation of the gate, source, and drain electrodes through the patterning, at least one of a capacitance between the gate and drain electrodes and a capacitance between the gate and source electrodes is constant or varies equally in each of the two transistors.

3. The liquid crystal device of claim 1, wherein each of the two thin film transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between the gate and drain electrodes and a variation in an overlapping area between the gate and source electrodes responsive to the alignment shift is constant or equal.

4. The liquid crystal device of claim 2, wherein each of the two thin film transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between the gate and drain electrodes and a variation in an overlapping area between the gate and

source electrodes responsive to the alignment shift is constant or equal.

5 5. The liquid crystal device of claim 1, wherein each of the two thin film transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between the semiconductor layer and the drain electrode and a variation in an overlapping area between the semiconductor layer and the source electrode responsive to the alignment shift is constant or equal.

10 6. The liquid crystal device of claim 2, wherein each of the two thin film transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between the semiconductor layer and the drain electrode and a variation in an overlapping area between the semiconductor layer and the source electrode responsive to the alignment shift is constant or equal.

20 7. The liquid crystal device of claim 1, wherein each of the two thin film transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between a channel

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protective film and the drain electrode and a variation in an overlapping area between the channel protective film and the source electrode responsive to the alignment shift is constant or equal.

8. The liquid crystal device of claim 2, each of the two thin film  
5 transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between a channel  
10 protective film and the drain electrode and a variation in an overlapping area between the channel protective film and the source electrode responsive to the alignment shift is constant or equal.

9. The liquid crystal device of any one of claims 1, ~~3, 5, and 7~~, wherein, if the source and drain electrodes of the first one of the two thin-film  
15 transistors connected to the first one of the image signal lines are S1 and D1 and the source and drain electrodes of the second one of the two thin-film transistors connected to the second one of the image signal lines are S2 and D2, the four electrodes are arranged along the image signal lines in the order of S1, D1, S2, and D2 or D1, S1, D2, and S2.

20 10. The liquid crystal device of any one of claims 1, ~~3, 5, and 7~~, wherein, if the source and drain electrodes of the first one of the two thin-film transistors connected to the first one of the image signal lines are S1 and D1 and the source and drain electrodes of the second one of the two thin-film transistors connected to the second one of the image signal lines are S2 and D2,  
25 the four electrodes are arranged along the scan signal lines in the order of S1,

D1, S2, and D2 or D1, S1, D2, and S2.

11. The liquid crystal device of any one of claims 2, ~~4, 6, and 8~~, wherein,  
if the source and drain electrodes of the first one of the two thin-film  
transistors connected to the first one of the scan signal lines are S1 and D1  
5 and the source and drain electrodes of the second one of the two thin-film  
transistors connected to the second one of the scan signal lines are S2 and D2,  
the four electrodes are arranged along the scan signal lines in the order of S1,  
D1, S2, and D2 or D1, S1, D2, and S2.

12. The liquid crystal device of any one of claims 2, ~~4, 6, and 8~~, wherein,  
10 if the source and drain electrodes of the first one of the two thin-film  
transistors connected to the first one of the scan signal lines are S1 and D1  
and the source and drain electrodes of the second one of the two thin-film  
transistors connected to the second one of the scan signal lines are S2 and D2,  
the four electrodes are arranged along the image signal lines in the order of S1,  
15 D1, S2, and D2 or D1, S1, D2, and S2.

13. The liquid crystal device of any one of claims 1, ~~3, and 5~~, wherein  
each of the two thin-film transistors is such that the source electrode or  
electrodes are larger in number than the drain electrode or electrodes thereof  
or the drain electrode or electrodes are larger in number than the source  
20 electrode or electrodes;

the source and drain electrodes are arranged alternately in parallel  
with the scan signal lines;

the source and drain electrodes have both ends extending off at least  
one of the semiconductor layer and a channel protective film in directions  
25 along the scan signal lines when viewed from above an upper surface of the

substrate; and

those ones of the electrodes which are larger in number than the other electrode or electrodes include two located at both ends in directions along the image signal lines and extending off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the image signal lines when viewed from above the upper surface of the substrate.

14. The liquid crystal device of any one of claims 2, ~~4, and~~ 6, wherein each of the two thin-film transistors is such that the source electrode or electrodes are larger in number than the drain electrode or electrodes thereof or the drain electrode or electrodes are larger in number than the source electrode or electrodes;

the source and drain electrodes are arranged alternately in parallel with the scan signal lines;

the source and drain electrodes have both ends extending off at least one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

those ones of the electrodes which are larger in number than the other electrode or electrodes include two located at both ends in directions along the image signal lines and extending off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the image signal lines when viewed from above the upper surface of the substrate.

15. The liquid crystal device of claim 1, wherein each of the two thin-

film transistors is such that the source electrodes and the drain electrodes are a plurality of source electrodes and a plurality of drain electrodes and are equal in number;

the source and drain electrodes are arranged alternately in parallel  
5 with the scan signal lines;

the source and drain electrodes have both ends extending off at least one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

10 those ones of the source and drain electrodes located at both ends in directions along the image signal lines extend off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the image signal lines when viewed from above the upper surface of the substrate.

15 16. The liquid crystal device of claim 1, wherein each of the two thin-film transistors is such that the source electrodes and the drain electrodes are a plurality of source electrodes and a plurality of drain electrodes and are equal in number;

the source and drain electrodes are arranged alternately in parallel  
20 with the image signal lines;

the source and drain electrodes have both ends extending off at least one of the semiconductor layer, a gate insulating film, and a channel protective film in directions along the image signal lines; and

those ones of the source and drain electrodes located at both ends in  
25 directions along the scan signal lines extend off at least one of the

semiconductor layer and the channel protective film in directions opposite to the directions along the scan signal lines when viewed from above the upper surface of the substrate.

17. The liquid crystal device of claim 2, wherein each of the two thin-  
5 film transistors is such that the source electrodes and the drain electrodes are a plurality of source electrodes and a plurality of drain electrodes and are equal in number;

the source and drain electrodes are arranged alternately in parallel with the scan signal lines;

10 the source and drain electrodes have both ends extending off at least one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

15 those ones of the source and drain electrodes located at both ends in directions along the image signal lines extend off at least one of the semiconductor layer, a gate insulating film, and the channel protective film in directions opposite to the directions along the scan signal lines when viewed from above the upper surface of the substrate.

18. The liquid crystal device of claim 2, wherein each of the two thin-  
20 film transistors is such that the source electrodes and the drain electrodes are a plurality of source electrodes and a plurality of drain electrodes and are equal in number;

the source and drain electrodes are arranged alternately in parallel with the image signal lines;

25 the source and drain electrodes have both ends extending off at least



one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

those ones of the source and drain electrodes located at both ends in  
 5 directions along the image signal lines extend off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the scan signal lines when viewed from above the upper surface of the substrate.

19. The liquid crystal device of claim 1, wherein the two thin-film  
 10 transistors have the respective two drain electrodes each composed of a thin-film semiconductor such that overlapping portions between the two drain electrodes and the gate electrodes are formed in the same directions relative to directions along the scan signal lines when viewed from above an upper surface of the substrate.

15 20. The liquid crystal device of any one of claims 1, ~~3, 5, 7, 15, 16~~, and 19, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

21. The liquid crystal device of claim 9, comprising pseudo-dot-  
 20 inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

22. The liquid crystal device of claim 10, comprising pseudo-dot-  
 inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

23. The liquid crystal device of claim 13, comprising pseudo-dot-

inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

24. The liquid crystal device of claim 20, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
5 predetermined-number-of-frames basis.

25. The liquid crystal device of claim 21, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
10 predetermined-number-of-frames basis.

26. The liquid crystal device of claim 22, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
predetermined-number-of-frames basis.

27. The liquid crystal device of claim 23, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
15 predetermined-number-of-frames basis.

28. The liquid crystal device of any one of claims 2, ~~4, 6, 7, 8, and 18,~~  
20 comprising pseudo-dot-inversion implementing means for impressing image signal voltages of the same polarities on the image signal lines during the same scan period and inverting the polarities of the voltages on a per specified-horizontal-scan-period basis.

29. The liquid crystal device of claim 11, comprising pseudo-dot-  
25 inversion implementing means for impressing image signal voltages of the

same polarities on the image signal lines during the same scan period and inverting the polarities of the voltages on a per specified horizontal-scan-period basis.

30. The liquid crystal device of claim 12, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of the same polarities on the image signal lines during the same scan period and inverting the polarities of the voltages on a per specified horizontal-scan-period basis.

31. The liquid crystal device of claim 14, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of the same polarities on the image signal lines during the same scan period and inverting the polarities of the voltages on a per specified horizontal-scan-period basis.

32. The liquid crystal device of claim 28, comprising frame-polarity inverting means for inverting the polarities of the image signal voltages impressed on the thin-film transistors connected to the same scan signal line over an entire frame on a per predetermined-number-of-frames basis.

33. The liquid crystal device of claim 29, comprising frame-polarity inverting means for inverting the polarities of the image signal voltages impressed on the thin-film transistors connected to the same scan signal line over an entire frame on a per predetermined-number-of-frames basis.

34. The liquid crystal device of claim 30, comprising frame-polarity inverting means for inverting the polarities of the image signal voltages impressed on the thin-film transistors connected to the same scan signal line over an entire frame on a per predetermined-number-of-frames basis.

35. The liquid crystal device of claim 31, comprising frame-polarity inverting means for inverting the polarities of the image signal voltages impressed on the thin-film transistors connected to the same scan signal line over an entire frame on a per predetermined-number-of-frames basis.

5 36. The liquid crystal device of claim 20, wherein the device is a color liquid crystal display device having pixels in primary colors arranged in stripes.

10 37. The liquid crystal device of claim 24, wherein the device is a color liquid crystal display device having pixels in primary colors arranged in stripes.

38. The liquid crystal device of claim 28, wherein the device is a color liquid crystal display device having pixels in primary colors arranged in stripes.

15 39. The liquid crystal device of claim 32, wherein the device is a color liquid crystal display device having pixels in primary colors arranged in stripes.

20 40. A liquid crystal device having scan signal lines, diodes, and pixel electrodes provided on one substrate, having image signal lines provided on the other substrate, and having a liquid crystal layer sandwiched between the two substrates, wherein:

two of the diode elements located between an adjacent two of the scan  
signal lines having respective gate electrodes are connected to different scan signal lines; and

each of the diodes is an alignment-shift-compensated diode having a  
25 configuration and a structure such that, even if an alignment shift occurs

during formation of the electrodes through patterning, a capacitance is constant or varies equally in each of the two diodes.

41. The liquid crystal device of claim 40, wherein the device is a color liquid crystal display device having pixels in primary colors arranged in stripes.
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protective film and the drain electrode and a variation in an overlapping area between the channel protective film and the source electrode responsive to the alignment shift is constant or equal.

8. The liquid crystal device of claim 2, each of the two thin film  
 5 transistors is an overlapping-area-compensated thin-film transistor formed as means for compensating for at least one of a variation in the capacitance between the gate and drain electrodes and a variation in the capacitance between the gate and source electrodes caused by the alignment shift such that at least one of a variation in an overlapping area between a channel  
 10 protective film and the drain electrode and a variation in an overlapping area between the channel protective film and the source electrode responsive to the alignment shift is constant or equal.

9. The liquid crystal device of ~~any one of claims 1, 3, 5, and 7~~ claim 1,  
 wherein, if the source and drain electrodes of the first one of the two thin-film  
 15 transistors connected to the first one of the image signal lines are S1 and D1 and the source and drain electrodes of the second one of the two thin-film transistors connected to the second one of the image signal lines are S2 and D2, the four electrodes are arranged along the image signal lines in the order of S1, D1, S2, and D2 or D1, S1, D2, and S2.

20 10. The liquid crystal device of ~~any one of claims 1, 3, 5, and 7~~ claim 1, wherein, if the source and drain electrodes of the first one of the two thin-film transistors connected to the first one of the image signal lines are S1 and D1 and the source and drain electrodes of the second one of the two thin-film transistors connected to the second one of the image signal lines are S2 and D2,  
 25 the four electrodes are arranged along the scan signal lines in the order of S1,

D1, S2, and D2 or D1, S1, D2, and S2.

11. The liquid crystal device of ~~any one of claims 2, 4, 6, and 8~~ claim 2,  
 wherein, if the source and drain electrodes of the first one of the two thin-film  
 transistors connected to the first one of the scan signal lines are S1 and D1  
 5 and the source and drain electrodes of the second one of the two thin-film  
 transistors connected to the second one of the scan signal lines are S2 and D2,  
 the four electrodes are arranged along the scan signal lines in the order of S1,  
 D1, S2, and D2 or D1, S1, D2, and S2.

12. The liquid crystal device of ~~any one of claims 2, 4, 6, and 8~~ claim 2,  
 10 wherein, if the source and drain electrodes of the first one of the two thin-film  
 transistors connected to the first one of the scan signal lines are S1 and D1  
 and the source and drain electrodes of the second one of the two thin-film  
 transistors connected to the second one of the scan signal lines are S2 and D2,  
 the four electrodes are arranged along the image signal lines in the order of S1,  
 15 D1, S2, and D2 or D1, S1, D2, and S2.

13. The liquid crystal device of ~~any one of claims 1, 3, and 5~~ claim 1,  
 wherein each of the two thin-film transistors is such that the source electrode  
 or electrodes are larger in number than the drain electrode or electrodes  
 thereof or the drain electrode or electrodes are larger in number than the  
 20 source electrode or electrodes;

the source and drain electrodes are arranged alternately in parallel  
 with the scan signal lines;

the source and drain electrodes have both ends extending off at least  
 one of the semiconductor layer and a channel protective film in directions  
 25 along the scan signal lines when viewed from above an upper surface of the

substrate; and

those ones of the electrodes which are larger in number than the other electrode or electrodes include two located at both ends in directions along the image signal lines and extending off at least one of the semiconductor layer  
 5 and the channel protective film in directions opposite to the directions along the image signal lines when viewed from above the upper surface of the substrate.

14. The liquid crystal device of ~~any one of claims 2, 4, and 6~~ claim 2,  
 wherein each of the two thin-film transistors is such that the source electrode  
 10 or electrodes are larger in number than the drain electrode or electrodes thereof or the drain electrode or electrodes are larger in number than the source electrode or electrodes;

the source and drain electrodes are arranged alternately in parallel with the scan signal lines;

15 the source and drain electrodes have both ends extending off at least one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

those ones of the electrodes which are larger in number than the other  
 20 electrode or electrodes include two located at both ends in directions along the image signal lines and extending off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the image signal lines when viewed from above the upper surface of the substrate.

25 15. The liquid crystal device of claim 1, wherein each of the two thin-



one of the semiconductor layer and a channel protective film in directions along the scan signal lines when viewed from above an upper surface of the substrate; and

those ones of the source and drain electrodes located at both ends in  
 5 directions along the image signal lines extend off at least one of the semiconductor layer and the channel protective film in directions opposite to the directions along the scan signal lines when viewed from above the upper surface of the substrate.

19. The liquid crystal device of claim 1, wherein the two thin-film  
 10 transistors have the respective two drain electrodes each composed of a thin-film semiconductor such that overlapping portions between the two drain electrodes and the gate electrodes are formed in the same directions relative to directions along the scan signal lines when viewed from above an upper surface of the substrate.

15 20. The liquid crystal device of ~~any one of claims 1, 3, 5, 7, 15, 16, and 19~~ claim 1, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

21. The liquid crystal device of claim 9, comprising pseudo-dot-  
 20 inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

22. The liquid crystal device of claim 10, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

25 23. The liquid crystal device of claim 13, comprising pseudo-dot-

inversion implementing means for impressing image signal voltages of opposite polarities on the adjacent two image signal lines.

24. The liquid crystal device of claim 20, comprising frame-polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
5 predetermined-number-of-frames basis.

25. The liquid crystal device of claim 21, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
10 predetermined-number-of-frames basis.

26. The liquid crystal device of claim 22, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
predetermined-number-of-frames basis.

27. The liquid crystal device of claim 23, comprising frame polarity inverting means for inverting the polarities of the image signal voltages impressed on the individual image signal lines over an entire frame on a per  
15 predetermined-number-of-frames basis.

28. The liquid crystal device of ~~any one of claims 2, 4, 6, 7, 8, and 18~~  
20 claim 2, comprising pseudo-dot-inversion implementing means for impressing image signal voltages of the same polarities on the image signal lines during the same scan period and inverting the polarities of the voltages on a per specified-horizontal-scan-period basis.

29. The liquid crystal device of claim 11, comprising pseudo-dot-  
25 inversion implementing means for impressing image signal voltages of the